Space Weather Forecast

Issued on Thursday, 01 December 2022 at 01:07 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: G1/Minor Geomagnetic Storm intervals likely with a chance of G2/Moderate Storm. This risk slowly declining until possible CME effects on Day 4 (04 Dec).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with several low level Common-class flares. There are currently three small and simple sunspot regions on the visible disc. Two of these are in the northwestern hemisphere, and the other in the southeast have all been fading in recent hours.

A filament (arc of plasma held above the Sun's surface by its magnetic field) eruption later on 29 Nov produced two slow Coronal Mass Ejections (CMEs), which may have an Earth directed component, most likely arriving during the early hours of 04 Dec. A further filament eruption earlier on 30 Nov may also have an Earth directed component, although evidence of this in imagery is limited.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of a coronal hole fast wind. Wind speeds have been Elevated or Strong, varying between 580-700 km/s. The Interplanetary Magnetic Field has been mostly Moderate, rising slightly through the period. The north-south component varied moderately. Geomagnetic activity was Quiet to Active (Kp 2-4) with a G1/Minor Storm interval between 1800-2100 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed during the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain Low, with isolated Common-class flares considered likely. New regions are starting to appear on the east limb and may give an increase in flaring in the coming days. Until they become fully visible, however, any increase in flare risk is difficult to assess.

Solar Wind / Geomagnetic Activity: Slow CMEs from 29-30 Nov may have some Earth directed component, although confidence is low. Any arrival is most likely during the early hours of Day 4 (04 Dec), although with some uncertainty in this. Solar wind speeds are currently Strong due to coronal hole fast winds. Wind speeds are expected to remain Elevated to Strong through Day 1 (01 Dec), slowly waning through the following days, likely to near background levels by Day 4.

Geomagnetic activity is expected to be Unsettled to G1/Minor storm at first, with a chance of G2/Moderate storms. Activity is expected to slowly decline through the coming days to mainly Quiet to Unsettled levels as the fast wind wanes. Then an increase is possible either late Day 3 or on Day 4 if we see any CME effects, with a slight chance of an isolated G1/Minor Storm interval.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected during the forecast period.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	70	40	10	20
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.